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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/823,777	04/14/2004	Aleksey Yurievich Kolesnychenko	081468-0309196	4703

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EXAMINER	
GUTIERREZ, KEVIN C	
ART UNIT	PAPER NUMBER
2851	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/823,777	KOLESNYCHENKO ET AL.	
	Examiner	Art Unit	
	Kevin Gutierrez	2851	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 May 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-27* is/are pending in the application.

4a) Of the above claim(s) *6,13,14 and 26* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,7-12,15-25 and 27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 April 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed May 29, 2007 have been fully considered but they are not persuasive.

Regarding the Remarks on pages 2-3, the Applicant states that Takahashi fail to disclose, teach or suggest applying a liquid to a localized area of the substrate. The Examiner respectfully disagrees. Takahashi discloses where a liquid (23) is applied to a particular place being a local area of the substrate (see fig. 2, where the liquid **23** is applied in a local area of the substrate **2**). For at least the reasons stated above, Takahashi alone and in combination with the provided references disclose the claimed invention rendering the instant application as unpatentable as stated in the rejections below.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-5, 7-10, 12, 15-25 and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Takahashi (5,610,683).

Regarding claims 1 and 19, Takahashi discloses "an illuminator (fig. 1, 3; illumination optical system) configured to provide a beam of radiation;

a support structure (5; reticle stage) configured to hold a patterning device (1; reticle), the patterning device configured to impart the beam with a pattern in its cross-section (col. 4, lines 63-64);

a substrate table (112; wafer chuck) configured to hold a substrate (fig. 2, 2; wafer);

a projection system (4; projection optical system, 7; final optical element) configured to project the patterned beam onto a target portion of the substrate (2); and

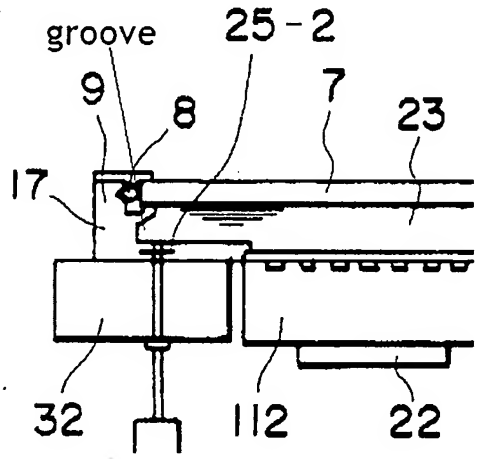
a liquid supply system (25-2 to 25-3) configured to supply a liquid (23; liquid) to a localized area of the substrate (2), the substrate table (14, 112) or both to at least partly fill a space (see fig. 2, where area is where liquid **23** is contained) between the projection system (4, 7) and the substrate (2), the substrate table or both,

wherein the substrate table (112) comprises a barrier (9; cassette) configured to collect liquid (fig. 2, where the cassette receives the liquid **23**), the barrier (9) surrounding and spaced apart (see fig. 2, where the cassette **9** surrounds and spaced apart by at least the distance of the liquid **23**) from the substrate (2)."

Regarding claims 2 and 20, Takahashi discloses "wherein the barrier (9) comprises a projection which projects out of an upper surface (see fig. 2, where heat insulating material **17** projects upward) of the substrate table (112)."

Regarding claim 3, Takahashi discloses "wherein at least a part of the barrier comprises a liquidphillic material or coating (col. 5, lines 47-50, where the material is ceramic. In a broad interpretation, any material would be considered liquidphillic)."

Regarding claims 4 and 21, Takahashi discloses "wherein the barrier (9, 17) comprises a groove (see provided figure 1 below, where groove is indicated) recessed into an upper surface of the substrate table (112)."



Provided figure 1

Regarding claim 5, Takahashi discloses "wherein the groove is sized such that the liquid (23) can be transported along the groove under capillary action (see fig. 2, where the liquid **23** can be transported and contained within groove showing in provided figure 1 above)."

Regarding claims 7 and 22, Takahashi discloses "further comprising a low pressure supply (col. 6, lines 35-38 and lines 42-44, where there is a circulation pump and/or a vacuum pump to apply low pressure in liquid circulation) configured to remove liquid from the barrier (9, 17)."

Regarding claim 8, Takahashi discloses "wherein the low pressure supply comprises a plurality of discrete outlets (see fig. 2, where 25-1 through 25-3 comprises of a piping system, which are interpreted as outlets)."

Regarding claims 9 and 23, Takahashi discloses "wherein the low pressure (24; vacuum pump) supply operates independently of the liquid supply system (25-2 through 25-3, where system utilizing **25-2** to **25-3** maintains liquid, which is independently from the vacuum pump **24**)."

Regarding claims 10 and 24, Takahashi discloses "further comprising a surface acoustic wave generator (22; ultrasonic vibration device) configured to generate surface acoustic waves in the barrier to facilitate transport of liquid along the barrier (col. 6, lines 39-41, where the liquid is homogenize)."

Regarding claims 12 and 25, Takahashi discloses "wherein the barrier (9, 17) comprises a groove and a projection which projects out of an upper surface of the substrate table (see provided figure 1 above, where the element **17** is projected upwards from the substrate table with a groove)."

Regarding claims 15 and 27, Takahashi discloses "wherein the barrier (9, 17) is positioned radially outwardly of a drainage ditch or barrier surrounding an outer peripheral edge of the substrate (see fig. 2, where cassette 9 surrounds the outer edge of the substrate **2**)."

Regarding claim 16, Takahashi discloses "wherein the barrier (9, 17) extends substantially around an outer edge or portion of the substrate table (see fig. 2, where the cassette **9** surrounds the edge of the substrate table **112**)."

Regarding claim 17, Takahashi discloses "wherein the barrier (9, 17) additionally surrounds areas of an upper surface of the substrate table which are not

covered by the substrate (fig. 2, where the cassette **9** surrounds the upper surface of the substrate table **112** and areas not covered by the wafer **2**)."

Regarding claim 18, Takahashi discloses "wherein the barrier (9) additionally surrounds at least one sensor (18; thermometer) mounted on an upper surface of the substrate table (112) and/or a closure member (7; optical element) configured to seal the liquid supply system (25-2 through 25-3)."

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi in view of Noolandi et al. (US 2004/0119795). The teachings of Takahashi have been discussed above.

Takahashi discloses a surface acoustic wave generator, but do not disclose "a piezoelectric actuator."

However, Noolandi et al. teaches a piezoelectric actuator used as an acoustic wave generator to generate ultrasonic vibration ([0054], lines 24-26). Thus, it would have been obvious to one ordinary skilled in the art at the time the invention was

made to modify the surface acoustic wave generator of Takahashi by including a piezoelectric actuator for at least the purpose of promoting flow of the liquid.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Gutierrez whose telephone number is (571)-272-5922. The examiner can normally be reached on Monday-Friday: 7:30 a.m. - 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diane Lee can be reached on (571)-272-2399. The fax phone

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Kevin Gutierrez
Examiner
Art Unit 2851

August 6, 2007

HENRY HUNG NGUYEN
PRIMARY EXAMINER